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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/799,839      | 03/12/2004  | Randy L. Hoffman     | 200316546-1         | 8519             |

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| EXAMINER |
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NGUYEN, DILINH P

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| ART UNIT | PAPER NUMBER |
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2814

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05/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/799,839

Applicant(s)

HOFFMAN, RANDY ET AL.

Examiner

DiLinh Nguyen

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,6,7,10,11,14 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6,7,10,11,14 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/22/07</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 6-7, 10-11 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masashi et al. (J.P. 2002-076356) (previously applied) in view of Ishihara et al. (U.S. Pub. 2004/0116617) (previously applied).

- Regarding claims 1, 6, 10 and 14, Masashi et al. disclose a semiconductor device, comprising:

- a drain electrode 13;

- a source electrode 12;

- a channel 11 contacting the drain electrode and the source electrode, wherein the channel made of zinc oxide and doped with a 3d transition-metals element, etc., (abstract and 0041); and

- a gate dielectric 15 positioned between a gate electrode 14 and the channel 11 (fig. 1A, paragraph 0019).

Masashi et al. do not explicitly disclose that the transition-metals element are germanium, lead, cadmium, tin or lead.

However, Ishihara et al. disclose a device structure comprising: a transition - metals element including germanium, lead, cadmium, tin or lead (paragraph 0008).

Therefore, it would have been obvious to one having ordinary in the art at the time the invention was made to select germanium, lead, cadmium, tin or lead in the transition-metals element of Masashi et al. because selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co., Inc. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

- Regarding claims 7, 11 and 15, it would have been obvious to have the one or more compounds of the formula  $A_xB_xC_xO_x$ ,  $A_xB_xC_xD_xO_x$  or  $A_xB_xC_xD_xE_xO_x$  includes an atomic composition of ratio A:B:C, A:B:C:D or A:B:C:D:E, wherein A, B, C, D and E, are each in a range of about 0.025 to about 0.95, about 0.017 to 0.95 or about 0.013 to about 0.95. Moreover, the ratio range would have been obvious to an ordinary artisan practicing the invention because, absent evidence of disclosure of criticality for the range giving unexpected results, it is not inventive to discover optimal or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Furthermore, the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising therefrom. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. See *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed, Cir. 1990).

### ***Response to Arguments***

Applicant's arguments filed 2/22/07 have been fully considered but they are not persuasive.

- The applicant argues that Ishihara reference does not describe, teach, or suggest a channel contacting the drain electrode and the source electrode.

Applicant's arguments have been fully considered but they are not persuasive because this argument has no immediate apparent relevance to the issues presented by the rejection before us since an appellant cannot show nonobviousness by attacking references individually wherein the rejection is based upon a combination of references. In re Young, 403 F. 2d 754, 757, 159 USPQ 725, 728 (CCPA 1968).

It should be noted that the rejection of claims 1, 6-7, 10-11 and 14-15 are not based on anticipation, but rather, are based on obviousness.

Examiner relies on the combined teachings at Masashi et al. and Ishihara et al. Ishihara et al. is not relied on for teaching a channel contacting the drain electrode and the source electrode.

Ishihara et al. is relied on for teaching a device structure comprising a transition - metals element including germanium, lead, cadmium, tin or lead (paragraph 0008). The Examiner thus regards the Applicant's assertions as constituting evidence that the Applicant has failed to consider as a whole the prior art teachings disclosed by the combining of the references.

- The applicant argues that Ishihara et al. do not disclose the channel includes one or more of a metal oxide including zinc-germanium, zinc-lead, cadmium-germanium, cadmium-tin, cadmium-lead.

Applicant's arguments have been have been fully considered but they are not persuasive because Masashi et al. substantially disclose all the limitations as claimed in

claim 1, such as: a channel 11 contacting the drain electrode and the source electrode, wherein the channel made of zinc oxide and doped with a 3d transition-metals element, etc., (abstract and 0041). Masashi et al. disclose a 3d transition- metals element, etc., but do not explicitly disclose that the transition-metals element are germanium, lead, cadmium, tin or lead.

Ishihara et al. is only relied on for teaching a device structure comprising a transition -metals element including germanium, lead, cadmium, tin or lead (paragraph 0008).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 5:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DLN



HOAI PHAM  
PRIMARY EXAMINER